UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

REGION 7
901 NORTH 5TH STREET
KANSAS CITY, KANSAS 66101

SEP 2 4 2010

ACTION MEMORANDUM

SUBJECT: Request for Time-Critical Removal Action and Exemption from the 12-Month and $2 Million Statutory Limit at the Big River Mine Tailings Site OU1 – Lake Timberline Sub-Site St. Francois County, Missouri.

FROM: Jeffrey G. Weatherford, P.E.
On-Scene Coordinator

THRU: Scott Hayes, Chief
Emergency Response and Removal South Branch

TO: Cecilia Tapia, Director
Superfund Division

Site ID: 07CR

I. PURPOSE

The purpose of this Action Memorandum is to request and document approval of the proposed removal action described herein and an exemption from the 12-month and $2 million statutory limit on removals for the Big River Mine Tailings Site – Lake Timberline Sub-Site (hereinafter Sub-Site). Residential properties or other areas conducive to attracting children where the soil contains lead concentrations equal to or greater than 1,200 parts per million (ppm) or where children less than 84 months of age or pregnant women reside and the lead concentrations in soil exceed 400 ppm will be included in the removal action. The primary objective of this removal action is to eliminate or reduce potential ingestion exposure due to the presence of lead and other heavy metals in the contaminated soils. In addition, the U. S. Environmental Protection Agency (EPA) will attempt to stabilize an abandoned railway rail bed built of lead waste that is currently contaminating a stream and several lakes in the Lake Timberline area.

This 12-month exemption and statutory limit of $2 million satisfies the criteria for removal actions under section 300.415(b)(2) of the National Contingency Plan (NCP), 40 C.F.R. § 300.415(b)(2). This request meets the emergency criteria for exemption of section 104(c)(1) of

2.0

the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) 42 U.S.C. § 9604(c)(1) from the statutory limits of removal actions and is necessary because EPA needs to eliminate or reduce potential ingestion exposure due to the presence of lead and other heavy metals in the soils and from contaminating a stream and several lakes in the Lake Timberline area.

II. SITE CONDITIONS AND BACKGROUND

A. Site Description

1. Removal site evaluation

Site Name: Big River Mine Tailings Site OU1 – Lake Timberline Sub-Site
Superfund Site ID: 07CR
NRC Case Number: N/A
CERCLIS Number: MOD981126899
Site Location: St. Francois County, Missouri
Latitude: 37.847166, Longitude: -90.495812
Removal Category: Time-Critical
Nationally Significant: No
Potentially Responsible Party (PRP): See the attached Confidential Enforcement Addendum
NPL Status: Listed on October 14, 1992

The Sub-Site consists of high concentrations of lead-contamination from mining and the use of mine waste as construction materials. The primary problem areas at this Sub-Site which require action are lead-contaminated soils in yards and the gravel in driveways.

2. Physical location

The Sub-Site is located in northern St. Francois County and is a stand-alone lake development community north of the City of Bonne Terre and south of Valle Mines, Missouri.

According to the Incidents of Mines, Occurrences, and Prospects (IMOP), database created by the state of Missouri, there was only limited mining within the current boundaries of Lake Timberline. However, the Mississippi River & Bonne Terre Railway (MR&BTR) rail-bed runs through the development. This railway (now abandoned) is comprised of mine waste (chat, tailings, smelter slag, etc.) based on visual observations and sample results. Three lakes within the development are adjacent to and receive storm-water runoff from the MR&BTR. In addition, based on documented conversations with some Lake Timberline residents, it appears lead-contaminated soil and gravel has been brought in from the surrounding areas. The soil was used as fill and the gravel was used for driveways throughout the community.

3. Site characteristics

In September 2005, the Region 7 Superfund Technical Assessment and Response Team contractor conducted screening of a portion of the MR&BTR which runs through the development along with soil from a nearby playground and sediment from Kiddie Lake. The screening was conducted with an X-Ray Florescence Spectrometer and the results detected lead-contamination in the pond sediments at levels ranging from 1,383 to 2,793 parts per million (ppm), results from soil screened in the park ranged from 213 to 3,390 ppm, and results from screening of the abandoned railroad ballast ranged from 646 to 2,080 ppm.

In March 2010, the EPA began a removal assessment which included soil and groundwater sampling in the Lake Timberline area. During this sampling event, EPA contractors screened the soil at 362 residences and sampled 226 private drinking water wells. The results of this sampling effort revealed the following information:

Properties with Soil Levels greater than 400 ppm lead.....209
Properties with Soil Levels greater than 1200 ppm lead 104
Drinking Water Wells Exceeding 15 parts per billion lead..... None

4. Release or threatened release into the environment of a hazardous substance, or pollutant or contaminant

The primary contaminant of concern at this Sub-Site is lead and lead compounds. EPA has documented total lead concentrations in soil/rock in residential properties at levels exceeding 400 ppm at 209 residences. EPA has currently identified 104 residential yards in the Lake Timberline area which exceed 1,200 ppm. Drinking water samples collected by EPA contractors indicate no potential release of heavy metal contaminants, particularly lead, into the groundwater. Private well water sampling documented no private drinking water wells which exceeded 15 parts per billion for lead.

Lead and lead compounds are hazardous substances as defined by section 101(14) of the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA), and are listed at 40 C.F.R. § 302.4 and have been detected in the soils and mining wastes at the Sub-Site.

5. National Priority List (NPL) status

The Big River Mine Tailings Site is currently on the NPL.

6. Maps, pictures, and other graphic representations

A site location map depicting the Lake Timberline Sub-Site is attached. Further information is available at www.epaosc.org/laketimberline.

B. Other Actions to Date

1. Previous actions

There have been no previous actions undertaken to address the Sub-Site.

2. Current actions

Other than this proposed removal action, there are no other known EPA response actions at this Sub-Site to reduce the risks posed by lead-contamination.

C. State and Local Authorities' Roles

1. State and local actions to date

EPA is closely coordinating with the Missouri Department of Natural Resources (MDNR), the Missouri Department of Health and Senior Services (MDHSS), and the Washington County Health Department. These agencies, EPA, and the Agency for Toxic Substances and Disease Registry (ATSDR) held a public meeting to announce that EPA would be sampling in the Lake Timberline area and then held another meeting to announce the results of sampling. EPA will continue to coordinate with MDNR as the removal action progresses.

2. Potential for continued state/local response

Local health officials are assisting in health education and blood lead testing, but are hampered by a general lack of funding. EPA is currently assisting the local health departments in conducting health education regarding lead-contamination and prevention of lead poisoning via a cooperative agreement or grant.

III. THREATS TO PUBLIC HEALTH OR WELFARE OR THE ENVIRONMENT, AND STATUTORY AND REGULATORY AUTHORITIES

At any release, regardless of whether the site is included on the NPL, where the lead agency makes the determination, based on factors in 40 C.F.R. § 300.415 (b)(2) that there is a threat to public health or welfare of the United States or the environment, the lead agency make take any appropriate removal action to abate, prevent, minimize, stabilize, mitigate, or eliminate the release or threat of release. The factors in 40 C.F.R. § 300.415 (b)(2) which apply to this Sub-Site are:

300.415(b)(2)(i) -- Actual or potential exposure to nearby human populations, animals, or the food chain from hazardous substances, or pollutants, or contaminants.

Elevated concentrations (greater than 400 ppm) of lead have been found throughout the Sub-Site. Children playing in and around the contaminated areas have the highest potential to be exposed. In addition, sampling has determined that a few private drinking water wells have been contaminated with lead.

Lead is a metal and has been listed as a hazardous waste (D008) in the regulations for the Resource Conservation and Recovery Act. Lead is classified by the EPA as a probable human carcinogen and is a cumulative toxicant. The early effects of lead poisoning are nonspecific and difficult to distinguish from the symptoms of minor seasonal illnesses. Lead poisoning causes decreased physical fitness, fatigue, sleep disturbance, headache, aching bones and muscles, digestive symptoms (particularly constipation), abdominal cramping, nausea, vomiting, and decreased appetite. With increased exposure, symptoms include anemia, pallor, a "lead line" on the gums, and decreased handgrip strength. Alcohol and physical exertion may precipitate these symptoms. The radial nerve is affected most severely causing weakness in the hands and wrists. Central nervous system effects include severe headaches, convulsions, coma, delirium, and possibly death. The kidneys can also be damaged after long periods of exposure to lead, with loss of kidney function and progressive azotemia. Reproductive effects in women include decreased fertility, increased rates of miscarriage and stillbirth, decreased birth weight, premature rupture of membrane, and/or pre-term delivery. Reproductive effects in men include erectile dysfunction, decreased sperm count, abnormal sperm shape and size, and reduced semen volume. Lead exposure is associated with increases in blood pressure and left ventricular hypertrophy. A significant amount of lead that enters the body is stored in the bone for many years and can be considered an irreversible health effect.

Children are more vulnerable to lead poisoning than adults. For children, lead can damage the central nervous system, kidneys, and reproductive system. At higher levels, it can cause comas, convulsions, and death. Even low levels of lead are harmful and are associated with decreased intelligence, impaired neurobehavioral development, decreased stature and growth, impaired hearing acuity, and possibly high blood pressure.

300.415(b)(2)(iv) -- High levels of hazardous substances or pollutants or contaminants in soils largely at or near the surface, that may migrate.

Lead has been detected in surface soils above the proposed action level of 1,200 ppm and 400 ppm in child high use areas. Lead-contaminated soils may migrate via airborne dusts, surface runoff, percolation into ground water, construction activity, by children transporting soils/dusts into their homes after playing in the affected areas, and track in by foot traffic. High levels of lead have also been detected on an abandoned railroad bed and in lake sediments at the Sub-Site, especially near the abandoned railway.

IV. ENDANGERMENT DETERMINATION

The actual release of a hazardous substance at this Sub-Site, if not addressed by implementing the response action selected in this Action Memorandum, presents an imminent and substantial endangerment to the health of the members of the public who come in contact with the Sub-Site and to public welfare and the environment.

Exemption From Statutory Limits

Response actions are otherwise appropriate and consistent with the remedial action to be taken. Similar NPL lead mining sites are ongoing throughout the region and excavation of contaminated soil has been the preferred alternative. Excavation of contaminated soils above 400 ppm is consistent with other lead mining remedial actions and will not interfere with likely remedial alternatives for addressing lead-contaminated soil.

Response actions are also necessary to avoid a foreseeable threat to Lake Timberline area residents. Without response activities by EPA, residents in the Lake Timberline area would risk exposure to high lead concentrations which could lead to the adverse health effects described in this Action Memorandum.

V. PROPOSED ACTIONS AND ESTIMATED COST

A. Proposed Actions

1. Proposed action description

Soil/Waste Excavation, Removal, And Replacement

EPA will not intentionally address naturally occurring lead ores in their undisturbed state as part of this action. Although the Sub-Site has been mined in the past, it may be possible to encounter naturally occurring lead ores during residential property excavation. Section 104 (a)(3)(A) of CERCLA states that removal or remedial actions shall not be provided in response to a release or threat of release of a naturally occurring substance in its unaltered form or altered solely through natural processes in a location where it is naturally found. Naturally occurring lead ores could be found at the bedrock interface and in undisturbed clay soils near the surface. Another indicator of the presence of naturally occurring lead ores could be a high density of galena crystals in soils or unusually high concentrations of lead in excavated soils. When these conditions are encountered, they will be documented, excavation will stop, and backfill will be initiated.

The U. S. Environmental Protection Agency (EPA) will attempt to stabilize an abandoned railway rail bed built of lead waste that is currently contaminating a stream and several lakes in the Lake Timberline area. In addition, residential properties or other areas conducive to attracting children where the soil contains lead concentrations equal to or greater than 1,200 parts per million (ppm) or where children less than 84 months of age or pregnant women reside and the lead concentrations in soil exceed 400 ppm will be included in the removal action.

Properties with soil concentrations of lead exceeding the action level will be excavated, in predetermined lifts until levels are below 400 ppm or until 12 inches of soil has been excavated. At 12 inches and if levels are not below 1,200 ppm, EPA will collect core samples in 6 inch lifts to determine contamination at depth. Based on the results of these samples, EPA will make a determination to continue excavation to two feet or place a brightly-colored warning barrier in the excavation to alert homeowners of the existence of high levels of lead at depth.

EPA will excavate and remove all soils and/or wastes from properties where a composite sample exceeds a concentration of 400 ppm lead and the area is a high-use area for children 84 months of age or younger, or pregnant women, or the property is a residence of a child with an elevated blood lead greater than 10 micrograms per deciliter.

Properties with soil concentrations of lead exceeding the action level will be excavated, in predetermined lifts until levels are below 400 ppm or until 12 inches of soil has been excavated. At 12 inches and if levels are not below 1,200 ppm, EPA will collect core samples in 6 inch lifts to determine contamination at depth. Based on the results of these samples, EPA will make a determination to continue excavation to two feet or place a brightly-colored warning barrier in the excavation to alert homeowners of the existence of high levels of lead at depth.

After removing the soils from the affected area or areas and placing the warning barriers where required, the excavated soils will be replaced with clean soils. Clean soils are soils that have been analyzed for lead and other heavy metals and results indicate that the lead concentration is below 240 ppm and all other hazardous substances, pollutants, or contaminants are below residential soil screening levels determined by EPA or by referring to the Region 3 Preliminary Remediation Goal tables found at *http://www.epa.gov/reg3hwmd/risk/human/rb-concentration_table/index.htm*

Soil Treatment And Disposal

EPA shall sample soil for conducting the Toxicity Characteristic Leaching Procedure (TCLP) according to the requirements of SW-846-Chapter 9 (representative sampling for waste piles). Soils that exceed the TCLP limits for lead must be properly treated with an appropriate lead stabilization chemical and re-sampled until the levels are below the TCLP limits for lead. Treatment of soils will likely not be conducted at the residence, but at the Lake Timberline soil repository.

Post Removal Site Control

It is EPA policy that Post Removal Site Control (PRSC) shall be the responsibility of the State, PRP or the remedial program. At this time it is uncertain what, if any, PRSC will be needed. When that determination is made the on-scene coordinator, working through regional management will attempt to obtain PRSC agreements, as appropriate.

2. Contribution to remedial performance

The actions proposed in this Action Memorandum should not impede any future remedial plans or other response. This removal action is consistent with any long-term remedy in that it fully addresses the direct contact threat posed by lead-contamination at this Sub-Site.

3. Action/cleanup level

Yards with soils contaminated with lead exceeding the concentrations described above will be excavated, treated if TCLP analysis fails, and disposed of at one of two potential on-site repositories. The first potential use for the soil would be to stabilize the mine waste on the MR&BT Railway. The second potential use for the contaminated yard soils would be to stabilize the mine waste at the Big River Tailings Pile in Desloge, Missouri.

All site-sampling activities for comparison to the action levels will be conducted in accordance with the approved Quality Assurance Project Plan.

4. Applicable relevant and appropriate requirements (ARARs)

Section 300.415(j) of the NCP provides that fund-financed removal actions under section 104 of CERCLA and removal actions pursuant to section 106 of CERCLA shall, to the extent practicable considering the exigencies of the situation, attain ARARs under federal environmental or state environmental facility citing laws.

Federal

The following specific federal ARARs have been identified for this action:

- Subtitle D of the Resource Conservation and Recovery Act (RCRA), Section 1008, Section 4001, et seq., 42 U.S.C. § 6941, et seq., State or Regional Solid Waste Plans and implementing federal and state regulations.

- Subtitle C of RCRA, 42 U.S.C. § 6901, et seq., 40 C.F.R. Part 260, et seq. and implementing federal and state regulations for contaminated soils that exhibit the characteristic of toxicity and are considered RCRA hazardous waste.

- Subtitle C of RCRA is potentially applicable for the removal of soils contaminated with heavy metals, particularly if these soils exceed the TCLP regulatory threshold. However, soils contaminated with heavy metals from extraction, beneficiation or processing of ores are exempt from the requirements of RCRA, Subtitle C pursuant to the Bevill amendment,

Section 3001(b)(3)(A) of RCRA, 42 U.S.C. § 6921(b)(3)(A), and implementing regulations, 42 U.S.C. § 261.4(b)(7).

- 40 C.F.R. Part 122, § 122.26, National Pollution Discharge Elimination System storm water discharge regulations may be relevant and appropriate for management of storm water runoff from the repository.

- 49 C.F.R. Parts 107, 171-177, Department of Transportation hazardous material transportation regulations may be relevant and appropriate for transportation of the contaminated soils to the repository.

State

In a letter dated September 16, 2010, the EPA requested potential state ARARs from MDNR. ARARs will be evaluated per the EPA guidance on consideration of ARARs during removal actions.

Any lead-bearing wastes exceeding the TCLP regulatory threshold will undergo treatment in accordance with the requirements of the RCRA and the Remedial Action Plan as described above.

5. Project schedule

Response activities are anticipated to begin within thirty (30) days of the signing of this Action Memorandum. It is expected that this removal action will take several months or years to complete, depending on future properties found.

B. Estimated Costs

The costs associated with this removal action are estimated as follows:

Extramural Costs:	
Removal Costs	$ 2,104,018
Contingency (20 percent)	$ 420,804
Total Removal Project Ceiling	$ 2,524,822

The EPA direct and indirect costs, although cost recoverable, do not count toward the total removal project ceiling for this removal action.

VI. EXPECTED CHANGE IN THE SITUATION SHOULD ACTION BE DELAYED OR NOT TAKEN

Delayed action will continue to potentially expose residents, particularly children, to the contaminated soils exceeding the federal action levels.

VII. OUTSTANDING POLICY ISSUES

None.

VIII. ENFORCEMENT

See the attached Confidential Enforcement Addendum for this Sub-Site. For NCP consistency purposes, it is not a part of this Action Memorandum.

The total EPA costs for this removal action based on full cost-accounting practices are estimated to be $4,422,777.

Direct Extramural Costs	$ 2,524,822
Direct Intramural Costs	526,000
EPA Indirect (44.97 percent of all costs)	$ 1,371,955
Total Removal Project Ceiling	$ 4,422,777

Direct costs include direct extramural and direct intramural costs. Indirect costs are calculated based on an estimated indirect cost rate expressed as a percentage of Site-specific direct costs, consistent with the full cost-accounting methodology effective October 2, 2000. These estimates do not include prejudgment interest, do not take into account other enforcement costs, including Department of Justice costs, and may be adjusted during the course of a removal action. The estimates are for illustrative purposes only and their use is not intended to create any rights for responsible parties. Neither the lack of a total cost estimate nor deviation of actual total costs from this estimate will affect the United States' right to cost recovery

X. RECOMMENDATION

This decision document represents the selected removal action for the contaminated soils and mine wastes at the Big River Mine Tailings Site OU1 - Lake Timberline Sub-Site. The removal action was developed in accordance with CERCLA, as amended, and is not inconsistent with the NCP. This decision is based on the Administrative Record for the Site.

Conditions at the Sub-Site meet the NCP Section 300.415(b) criteria for a removal action and I recommend your approval of the proposed removal action. If approved, the extramural removal project ceiling of $2,524,822 will be funded from the Regional Removal Advice of Allowance.

Approved:

Cecilia Tapia, Director
Superfund Division

Date 9/24/10

Attachments
1. Site Location Map
2. Confidential Enforcement Addendum

Attachment I

Site Location Map